Gingival Index

Procedure & Method Information

Name of Procedure/Method Gingival Index

Abbreviation GI

Purpose To assess the prevalence and severity of gingivitis.

Year of Establishment 1963

Type of Procedure/Method

Developer(s) H. Loe and J. Silness

Oral Condition Category

Background Information

Background Information

The Gingival Index (GI) was developed by H. Loe and J. Silness in 1963 to assess the severity and prevalence of gingivitis by examining only the qualitative changes (i.e., severity of the lesion) of the gingival soft tissue. The GI does not take into account periodontal pocket depth, degrees of bone loss, or any other quantitative change of the periodontium (Loe, 1967).

The GI is one of the most widely accepted and used gingival bleeding indices due to its documented validity, reliability, and ease of use. However, even though the GI has demonstrated sufficient sensitivity to distinguish between groups with mild and severe gingivitis, it may not discriminate as well between the middle ranges (Burt and Eklund, 1999).

It can be used on all surfaces for the entire mouth or selected teeth (Burt and Eklund, 1999) or selected areas of all or selected teeth (Loe, 1967). It also can be used on large population groups or an individual.

Changes Over Time

None

Procedure Method

Procedure Method

To obtain the GI, the examiner first will need sufficient lighting, a mouth mirror, and probe. The teeth and gingiva (gums) also should be dried lightly with a blast of air and/or cotton rolls.

The buccal, lingual, mesial, and distal surface areas of six teeth are examined and scored according to the following criteria and scoring system (Loe and Silness, 1963). The six teeth that are evaluated are the upper right first molar, the upper right lateral incisor, the upper left first bicuspid, the lower left first molar, the lower left lateral incisor, and the lower right first bicuspid.

To calculate the GI for an individual, each of the four gingival areas (i.e., buccal, lingual, mesial, and distal) of the tooth is given a score from 0 to 3 as described in the following criteria (Loe and Silness, 1963). Then, the four scores from the gingival area are added and divided by 4 to give the GI for the tooth. Afterwards, the GI for the teeth are added and divided by the number of teeth examined (i.e., 6). In addition, the scores for the individual teeth (i.e., incisors, premolars, and molars) may be grouped to designate the GI for groups of teeth.

Criteria and Scoring for the Gingival Index (GI) (Loe and Silness, 1963)

0 = Absence of inflammation.
1 = Mild inflammation - slight change in color and little change in texture.
2 = Moderate inflammation - moderate glazing, redness, oedema, and hypertrophy. Bleeding on pressure.
3 = Severe inflammation - marked redness and hypertrophy. Tendency to spontaneous bleeding. Ulceration.

Source: Loe H, Silness J. Periodontal disease in pregnancy. I. Prevalence and severity. Acta Ondont Scand. 1963; 21:533-51.

Mild inflammation usually occurs from 0.1 to 1.0, where moderate inflammation occurs from 1.1 to 2.0, and severe inflammation scores between 2.1 and 3.0 (Loe and Silness, 1963; Loe, 1967).

Established Modifications

In 1967, Loe detailed the sequence of the examination procedure and slightly modified the procedure to include the entire dentition instead of six teeth (Marks et al., 1993). This detailed exam is as follows:

Using gentle probing pressure, the examination of all erupted teeth typically starts with the upper right second molar and continues over the midline to the upper left second molar. For teeth on the right side of the midline, the exam sequence is distal, buccal/labial, and mesial. On the left side, the exam sequence is mesial, buccal/labial, and distal. When the three surfaces (i.e., distal, buccal/labial, mesial) of all teeth have been scored, the lingual surfaces of all the upper or maxillary teeth are examined beginning with the upper left second molar.

For the lower or mandibular arch, the exam begins with the lower left second molar through to the right second molar. On the left side of the midline, the exam sequence is distal, buccal/labial, and mesial, and on the right side it is mesial, buccal/labial, and distal. Afterwards, all lingual surfaces are scored beginning with the left second molar.

However, according to research, analyses show no difference in the results when only one of the interproximal surfaces for a tooth is examined instead of both, although the score for the one interproximal surface was doubled to allow for the second interproximal surface and the total score for the tooth was divided by 4 (Loe, 1967).

Third molars or wisdom teeth are not examined or scored in the upper or lower arch. According to the developers, the scoring for the GI takes approximately 2 to 5 minutes under optimal conditions and with chair-side assistance.

The calculation for the GI of an individual remained the same except the maximum number of teeth examined in the denominator is 28 instead of 6.

Criteria and Scoring for the Gingival Index (GI) (Loe, 1967)

0 = Normal gingiva.
1 = Mild inflammation - slight change in color, slight edema. No bleeding on probing.
2 = Moderate inflammation - redness, edema, and glazing. Bleeding on probing.
3 = Severe inflammation - marked redness and edema. Ulceration. Tendency to spontaneous bleeding.

Source: Loe H. The Gingival Index, the Plaque Index, and the Retention Index Systems. J Periodontol, part II, 1967; 38(Suppl):610-6.

In 1983, I.B. Lamster, M.C. Alfano, M.C. Seiger, and J.M. Gordon introduced further modifications to the Gingival Index by changing the ordinal scoring system and the invasive examination procedure to a noninvasive approach. This modified version of the Gingival Index was recommended by Lobene in 1986 due to its increased sensitivity in the low region of the scoring scale and the elimination of the "bleeding on pressure" component (Lobene, 1986; Lobene, Mankodi, Ciancio, Lamm, Charles, and Ross, 1989). For more information, see the Modified Gingival Index.

Federal Survey Modifications

None

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